LAUREN RICH

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EDUCATION

University of Michigan – *Ann Arbor, MI* Aug. 2022 – Present
Doctoral Candidate in Chemistry
Cumulative GPA: 3.91

Trinity University – *San Antonio, TX* Aug. 2018 – May 2022
Bachelor of Science in Chemistry
Cumulative GPA: 3.57, *cum laude*

HONORS AND AWARDS

NSF Graduate Research Fellow Apr. 2023
Trinity University Presidential Excellence in Leadership and Service Apr. 2022
Senior Achievement Award in Research Mar. 2022
John A. Burke Award for Achievement in Inorganic Chemistry Dec. 2021
ACS Undergraduate Award in Inorganic Chemistry Dec. 2021
Southwest Catalysis Society Best Poster Award Apr. 2021
Trinity University Murchison Scholar Aug. 2018

PUBLICATIONS

Mahdavi-Shakib, A., Whittaker, T.N., Yun, T.Y. Kumar, K.B. Sravan, **Rich, L.C.,** Wang, S., Rioux, R.M., Grabow, L.C., Chandler, B.D. The role of surface hydroxyls in the entropy-driven adsorption and spillover of H2 on Au/TiO2 catalysts. *Nat Catal.* **2023**, 6, 710–719.

Mahdavi-Shakib, A.; **Rich, L. C.**; Whittaker, T. N.; Chandler, B. D. Hydrogen Adsorption at the Au/TiO2 Interface: Quantitative Determination and Spectroscopic Signature of the Reactive Interface Hydroxyl Groups at the Active Site. *ACS Catal.* **2021**, *11* (24), 15194–15202.

PRESENTATIONS

2021 Southwest Catalysis Society Poster Session
Understanding H_2 Adsorption Kinetics through FTIR Spectroscopy *Spring 2021*

2021 Trinity University Chemistry Department Summer Research Symposium
Exploring H_2 Dissociation on Ru/TiO_2 Catalysts *Summer 2021*

RESEARCH EXPERIENCE

Graduate Researcher – *University of Michigan* Aug. 2022 – Present
Advisor: Stephen Maldonado
Project: Electrochemical Deposition of Epitaxial Thin Films Using a Hybrid Methodology of SECCM and ec-LPE.

- Developing new methodology for scanning electrochemical cell microscopy in the lab.
    - Fabricating micropipettes and ultra-microelectrodes with varying tip sizes from 1 – 50 μm.
    - Building and designing accessories for the scanning electrochemical microscope setup.
- Electrodepositing thin films of germanium onto high-lifetime Si wafers using the scanning micropipette probe.

Undergraduate Research Assistant – *Trinity University* Aug. 2020 – May 2022
Advisor: Bert Chandler

Project: Monitoring Mechanism of H_2 Dissociation on Ru, Pd, Pt/TiO_2 Catalysts

- Tracked H_2 adsorption through *in situ* FTIR on an array of catalysts, aiming to apply framework of known H_2 activation mechanism on Au/TiO_2 catalysts.
    - Monitor movement of electrons and protons resulting from heterolytic H_2 dissociation at the MSI.
    - Perform quantitative kinetic analysis using broad band absorbance (BBA) feature to describe process of electron injection.
- Synthesized Ru/TiO_2 catalysts through deposition precipitation and incipient wetness methods.
- Adjusted *in situ* FTIR setup to remove any impurities from the system that appeared in FTIR spectra.
- Performed H_2 volumetric adsorption on catalysts to analyze the presence of strongly and weakly adsorbed species.

Project: Monitoring H_2 Adsorption on Au/TiO_2 Catalysts using Spectroscopic Signatures

- Calculated activation energy of electron injection using broad band absorbance (BBA) spectroscopic signature from FITR.
- Mentored new students that joined the lab in data collection techniques.
- Troubleshooted and engineered adjustments to *in situ* FTIR setup as necessary.
- Analyzed the properties behind $_{MSI}TiOH_2^+$ feature observed in FTIR spectra in the presence of H_2.
- Performed H/D isotope experiments to analyze KIE.

LEADERSHIP

Trinity Mutual Aid Oct. 2020 – May 2022
Founder & Financial Administrator

- Raised over $120,000 in 2021 in efforts to redistribute wealth to the San Antonio community.
- Cultivated group of diverse members to address social inequities in San Antonio community.
- Perform supplies distribution to houseless community monthly.

- Planned and organized seasonal fundraisers.
- Document funds, create budgets and monthly reports.
- Reimburse volunteers who perform "pantry-runs" to community fridges around San Antonio.
- Managed collaborations with other organizations to assist many different communities.

NCAA DIII Softball Aug. 2018 – Nov. 2020

Trinity University

- Practiced 20 hours per week in preparation for gameplay.
- Played four games every weekend while in-season.
- Participated in outreach as a team in efforts to teach young softball players new skills.

Tigerthon Aug. 2019 – May 2020

Event Planning Committee

- Planned 5 small community events to raise money for the Children's Hosiptal in San Antonio, TX
- Hosted one large all-day event that raised $19,000 for the Children's Hospital.

COMMUNITY OUTREACH

STEMFest May 2023

- Demonstrated and explained the science behind a salt recrystallization to children.

Logan Elementary School Science Fair April 2023

- Judged and provided feedback to student's science fair projects.
- Performed scientific demonstrations for the students.

Huron River Cleanup Nov. 2022 & Apr.2023

Team Leader

- Coordinated a team of Chemistry graduate students to pick-up and report trash in two local Ann Arbor parks.

TEACHING EXPERIENCE

Graduate Student Instructor, *University of Michigan* Aug. 2022 – Apr. 2023

Organic Chemistry 1 & Organic Chemistry 2

- Oversaw two sections of organic chemistry lab.
- Prepare presentation for each class and provide supplementary information for the lecture course.
- Gave feedback on student pre-lab and post-labs.
- Maintained proper laboratory environment, explain procedures, and enforce safety rules during the class sessions.
- Proctored and graded lecture course exams.

Peer Tutor, *Trinity University* Aug. 2021 – Dec. 2021

General Chemistry

- Held 7 hours of office hours per week so that students may come and ask questions about course material.
- Advised students in good study habits for the course.

GENERAL WORK EXPERIENCE

Barista, *Summer Moon Coffee* May 2022 – Aug. 2022
Barista, *Barnes & Noble Café* Jun. 2021 – Dec. 2021
Intern, *Owl Radio and Low Vision Resource Center* Jun. 2020 – Nov. 2020
Sales Associate, *Gap Inc.* Jun. 2019 – Jan. 2020

SKILLS

Technical Skills: *in-situ* FTIR, scanning electron microscopy, UV-vis spectroscopy, scanning electrochemical microscopy, CO_2 laser etching
Programs: Microsoft Office Suite, Igor, LaTeX,